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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,765	02/15/2002	Takayuki Shoji	Q68556	9495

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SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER
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VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/075,765

Applicant(s)

SHOJI ET AL.

Examiner

Kallambella Vijayakumar

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Application filed 02/15/2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 5-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**Detailed Action**

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- Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file. Claims 1-18 are currently pending with the application.
- The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the examiner on form PTO-892 has cited the references and/or the applicants have provided them on PTO-1449, they have not been considered.
- The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

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***Election/Restrictions***

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Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-4, drawn to Li-Mn-Complex Oxide, classified in class 252, subclass 518.1.
- II. Claims 5-6, drawn to Mn-M complex oxide slurry, classified in class 423, subclass 49.

- III. Claims 7-14, drawn to Method of producing Li-Mn-Complex Oxide, classified in class 423, subclass 49.
- IV. Claims 15-18, drawn to Battery, classified in class 429, subclass 206.

Inventions III/II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product could be made by co-melting of nitrates of the component elements.

Inventions IV and I are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product could be used as an oxidation catalyst.

Inventions II and I are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product (MPEP § 806.04(b), 3rd paragraph), and the species are patentably distinct (MPEP § 806.04(h)). In the instant case, the intermediate product is deemed to be useful as a precursor for the supported catalyst and the inventions are deemed patentably distinct since there is nothing on this record to show them to be obvious variants. Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to

be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions anticipated by the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, and the search required for Group I is not required for Groups II/III/IV, restriction for examination purposes as indicated is proper.

During a telephone conversation with Peter Olexy on 01/15/2004 a provisional election was made without traverse to prosecute the invention of Group-I, claims 1-4. Affirmation of this election must be made by applicant in replying to this Office action. Claims 5-18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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*Claim Rejections - 35 USC § 102*

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-4 rejected under 35 U.S.C. 102(e) as being anticipated by Manev et al (US Patent 6,267,943).

Manev et al disclose Lithium Manganese Oxide Spinel Compounds with the formula  $\text{Li}_{1+X}\text{Mn}_{2-Y}\text{M}^1_{m1}\text{M}^2_{m2}\dots\text{M}^k_{mk}\text{O}_{4+Z}$  wherein  $\text{M}^1, \text{M}^2 \dots \text{M}^k$  are cations different than Li or Mn, such as transition metals that includes Fe, Co, and Ni, and metals such as Al; X, Y,  $m_1$ ,  $m_2$ ,  $m_k$  each have value between 0 and 0.2; Z has value between -0.1 and 0.2; and X, Y,  $m_1$ ,  $m_2$ ,  $m_k$  are selected to satisfy the relation,  $Y=X+m_1+m_2+\dots+m_k$ . (Abstract). The above composition for Li-Mn-Oxide Spinel and the oxide compositions in Figures 6 and 7 by Manev et al would meet the limitation of oxide composition in instant claim-1. The SEM data in Figures 2A and 2B show the particle size for these Li-Mn-Oxide Spinel by Manev et al would meet the particle size limitation in instant claim-1. Manev et al further teach that the particle size for these spinels could be controlled to any desired size by grinding the product between the firing steps (Col-6, Lines: 1-3). Manev et al further disclose the optimum full width at half maximum of x-ray diffraction peaks from planes (400) and (440) using Cu-K $\alpha$  rays of less than about  $0.15^\circ 2\theta$  for their Lithium Manganese Oxide Spinel Compounds, and this would meet the limitation of half value width of (400) plane for the Li-Mn-Oxide Spinel in instant claim-1. Substitution of Aluminum for M in the formula of Manev et al would meet

the limitation composition in instant claim-2. The BET N<sub>2</sub> surface area for the Li-Mn-oxides by Manev et al was less than about 0.5 m<sup>2</sup>/g and would meet the surface area limitations in instant claims 3 and 4 (Col-7, Lines: 3-12; Figures: 6 & 7). All the limitations of the instant claims are met.

The reference is anticipatory.

2. Claims 1-4 are rejected as anticipated by Iwata et al (JP 11-071115) in view of Manev et al (US Patent 6,267,943).

Normally, only one reference should be used in making a rejection under 35 U.S.C. 102. However, a 35 U.S.C. 102 rejection over multiple references has been held to be proper when the extra references are cited to (SEE MPEP 2131.01):

- (A) Prove the primary reference contains an "enabled disclosure;"
- (B) Explain the meaning of a term used in the primary reference; or
- (C) Show that a characteristic not disclosed in the reference is inherent.

Iwata et al disclose Li-Mn-based oxide having spinel composition for the lithium secondary battery, with the formula  $\text{Li}[\text{Li}_x\text{-M}_y\text{-Mn}_{(2-x-y)}]\text{O}_{4+d}$ , and having a cubic spinel structure with lattice constant in the range of 8.19Å or more and 8.24Å or less, where M was at least one element selected from many elements including Fe, Co, Ni, Mg, and Al; and the values for the elemental ranges in the composition of  $0 < x \leq 0.33$ ;  $0 < y \leq 1$ ,  $0.5 < d \leq 0.8$  would meet the limitation of Li-Mn-complex oxide composition in claim-1. The primary particle diameter of less than 3 microns for the spinels reported by Iwata et al would meet the limitation of diameter of crystal grains in instant claim-1. The half width values for (400) plane of powder X-ray diffraction by Cu-K $\alpha$  radiation for the Li-

Mn-Oxide spinels of Iwata would be inherent as shown by the crystal structure and lattice constant values for these spinels, as shown by Manev et al in Rejection-1, because Li-Mn-Oxide spinels of both Iwata and Manev have identical compositions and crystal structures, and further both the Li-Mn-oxide spinels are electrode materials in Li-secondary battery, and this would meet the half value width of the (400) plane in instant claim-1. The various listed elements substituting M in the above composition of Iwata et al would further meet the limitations of elemental composition in instant claims 1 and 2. The surface area values of 0.1-5 m<sup>2</sup>/g BET reported by Iwata et al would meet the surface area limitations in instant claims 3 and 4 (Abstract, Claims 1-12). All the limitations of the instant claims are met.

The reference is anticipatory.

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### *Conclusion*

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- The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Yamauchi et al (JP 11-054155), Takimoto et al (JP 11-339805), Yamamoto et al (JP 2000-159522), Inoue et al (JP 11-240721), Kelder (US Patent 5,948,565), Manev et al (US Patent 6,114,064) and Honbo et al (EP 1,049,187).
- Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kallambella Vijayakumar whose telephone number is 571-272-1324. The examiner can normally be reached on M-Th, 07.00 - 16.30 hrs, Alt. Fri: 07.00-15.30 hrs.

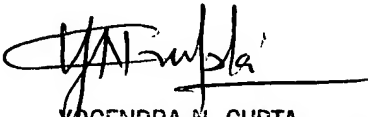


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- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.
- Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

KMV  
January 26, 2004

  
YOGENDRA M. GUPTA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700